

IN THE CLAIMS:

1 1. (Original) An arc tube having a glass tube that is wound into a spiral, wherein
2 the glass tube has an inner shape of a substantially circular cross section, with
3 an inner tube diameter in a range of 5 mm to 9 mm inclusive, and
4 a bulb wall loading is set so that a temperature of a coldest spot within the
5 glass tube under steady state illumination falls into a range of 60° C to 65° C inclusive.

1 2. (Original) An arc tube having a glass tube that is wound into a spiral, wherein
2 the glass tube has an inner shape of a substantially elliptical cross section, with
3 an inner tube major axis in a range of 5 mm to 9 mm inclusive and an inner tube minor axis
4 of 3 mm or larger,
5 a bulb wall loading is set so that a temperature of a coldest spot within the
6 glass tube under steady state illumination falls into a range of 60 °C to 65 °C inclusive.

1 3. (Original) The arc tube of Claim 1, wherein
2 the bulb wall loading is set within a range of 0.08 W/cm² to 0.12 W/cm²
3 inclusive.

1 4. (Original) The arc tube of Claim 1, wherein
2 the glass tube is in a shape of double-spiral comprising a turning part, a first
3 spiral part, and a second spiral part, the turning part being located in substantially a
4 midsection of the glass tube, the first spiral part starting from one end of the glass tube and
5 spiraling around a pivotal axis to reach the turning part, the second spiral part starting from
6 the turning part and spiraling around the pivotal axis to the other end of the glass tube.

1 5. (Original) The arc tube of Claim 3, wherein
2 the glass tube is in a shape of a double-spiral comprising a turning part, a first
3 spiral part, and a second spiral part, the turning part being located in substantially a
4 midsection of the glass tube, the first spiral part starting from one end of the glass tube and
5 spiraling around a pivotal axis to reach the turning part, the second spiral part starting from
6 the turning part and spiraling around the pivotal axis to the other end of the glass tube.

1 6. (Currently Amended) The arc tube as recited in one of ~~Claims 1 to 5~~ Claim 5,
2 wherein

3 the glass tube is formed so as to fit into a cylindrical space of maximum
4 diameter in a range of 30 mm to 40 mm inclusive and maximum length in a range of 50 mm
5 to 100 mm inclusive.

1 7. (Cancelled)

1 8. (New) The arc tube as recited in Claim 1, wherein elemental mercury is
2 sealed within the glass tube.

1 9. (New) The arc tube as recited in Claim 2, wherein elemental mercury is
2 sealed within the glass tube.

1 10. (New) The arc tube as recited in Claim 3, wherein elemental mercury is
2 sealed within the glass tube.

1 11. (New) The arc tube as recited in Claim 4, wherein elemental mercury is
2 sealed within the glass tube.

1 12. (New) The arc tube as recited in Claim 5, wherein elemental mercury is
2 sealed within the glass tube.

1 13. (New) A low-pressure mercury lamp that includes the arc tube as recited in
2 Claim 1.

1 14. (New) A low-pressure mercury lamp that includes the arc tube as recited in
2 Claim 2.

1 15. (New) A low-pressure mercury lamp that includes the arc tube as recited in
2 Claim 3.

1 16. (New) A low-pressure mercury lamp that includes the arc tube as recited in
2 Claim 4.

1 17. (New) A low-pressure mercury lamp that includes the arc tube as recited in
2 Claim 5.

1 18. (New) A low-pressure mercury lamp that includes the arc tube as recited in
2 Claim 6.

1 19. (New) In a low-pressure mercury lamp, the improvement of a glass tube
2 comprising:

3 the glass tube configured to have a shape of double-spiral comprising a turning
4 part, a first spiral part, and a second spiral part, the turning part being located in substantially
5 a midsection of the glass tube, the first spiral part starting from one end of the glass tube and
6 spiraling around a pivotal axis to reach the turning part, the second spiral part starting from
7 the turning part and spiraling around the pivotal axis to the other end of the glass tube; and

8 a bulb wall loading is set within a range of 0.08 W/cm² to 0.12 W/cm²
9 inclusive, so that a temperature of a coldest spot within the glass tube under steady state
10 illumination falls into a range of 60 °C to 65 °C inclusive.